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HUDSON RIVER BASIN CHESHIRE, MASSACHUSETTS



CHESHIRE RESERVOIR DAM MA 00211

PHASE 1 INSPECTION REPORT NATIONAL DAM INSPECTION PROGRAM



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DEPARTMENT OF THE ARMY
NEW ENGLAND DIVISION, CORPS OF ENGINEERS
__WALTHAM, MASS. 02154

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NOVEMBER 1978

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UNCLASSIFIED

SECURITY CLASSIFICATION OF THIS PAGE (When Date Entered)

REPORT DOCUMENTATION	PAGE	READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER MA 0211	A154483	
4. TITLE (and Subtitio)	<u> </u>	S. TYPE OF REPORT & PERIOD COVERED
Chershire Reservoir Dam		INSPECTION REPORT
NATIONAL PROGRAM FOR INSPECTION OF DAMS	NON-FEDERAL	6. PERFORMING ORG. REPORT NUMBER
7. AUTHOR(a)		8. CONTRACT OR GRANT NUMBER(*)
U.S. ARMY CORPS OF ENGINEERS NEW ENGLAND DIVISION		
9. PERFORMING ORGANIZATION NAME AND ADDRESS		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS
11. CONTROLLING OFFICE NAME AND ADDRESS DEPT. OF THE ARMY, CORPS OF ENGINEE		12. REPORT DATE November 1978
NEW ENGLAND DIVISION, NEDED 424 TRAPELO ROAD, WALTHAM, MA. 0225		13. NUMBER OF PAGES
14. MONITORING AGENCY NAME & ADDRESS(If differen	t from Controlling Office)	18. SECURITY CLASS. (of this report)
		UNCLASSIFIED
		18a. DECLASSIFICATION/DOWNGRADING SCHEDULE
16. DISTRIBUTION STATEMENT (of this Report)		
APPROVAL FOR PUBLIC RELEASE: DISTRI	BUTION UNLIMITED	
17. DISTRIBUTION STATEMENT (of the obstract entered	in Block 20, If different fro	em Report)
18. SUPPLEMENTARY NOTES		

Cover program reads: Phase I Inspection Report, National Dam Inspection Program; however, the official title of the program is: National Program for Inspection of Non-Federal Dams; use cover date for date of report.

19. KEY WORDS (Continue on reverse side if necessary and identify by block number)

DAMS, INSPECTION, DAM SAFETY,

Hudson River Basin Chershire, Massachusetts Hoosic River

20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

Chershire Reservoir Dam is a stone masonry and concrete gravity dam about 50.5 feet long, and about 14 feet high with a dropped center spillway 40.5 feet long and a freeboard of 2.7 feet. Based on the Corps of Engineers guidelines, the dam seens to be in fair condition. Since the dam is classified as intermediate in size with a low hazard potential, the test flood, is 1/2 the Probable Maximum Flood.



DEPARTMENT OF THE ARMY

NEW ENGLAND DIVISION, CORPS OF ENGINEERS
424 TRAPELO ROAD
WALTHAM, MASSACHUSETTS 02154

REPLY TO ATTENTION OF:

NEDED

JAN 3 0 1979

Honorable Edward J. King Governor of the Commonwealth of Massachusetts State House Boston, Massachusetts 02133

Dear Governor King:

I am forwarding to you a copy of the Cheshire Reservoir Dam Phase I Inspection Report, which was prepared under the National Program for Inspection of Non-Federal Dams. This report is presented for your use and is based upon a visual inspection, a review of the past performance and a brief hydrological study of the dam. A brief assessment is included at the beginning of the report. I have approved the report and support the findings and recommendations described in Section 7 and ask that you keep me informed of the actions taken to implement them. This follow-up action is a vitally important part of this program.

A copy of this report has been forwarded to the Department of Environmental Quality Engineering, the cooperating agency for the Commonwealth of Massachusetts. In addition, a copy of the report has also been furnished the owner, Hoosac Reservoir Company, c/o Arnold Print Works, Inc., Columbia Street, Adams, Massachusetts 01220. ATTN: Mr. Richard Miller, Plant Engineer.

Copies of this report will be made available to the public, upon request, by this office under the Freedom of Information Act. In the case of this report the release date will be thirty days from the date of this letter.

I wish to take this opportunity to thank you and the Department of Environmental Quality Engineering for your cooperation in carrying out this program.

Sincerely yours,

Incl As stated JOHN P. CHANDLER

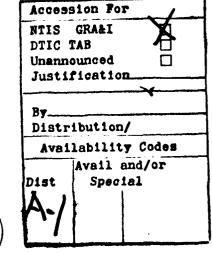
Colonel, Corps of Engineers

Division Engineer

CHESHIRE RESERVOIR DAM MA 00211

HUDSON RIVER BASIN CHESHIRE, MASSACHUSETTS

PHASE 1 INSPECTION REPORT NATIONAL DAM INSPECTION PROGRAM





NATIONAL DAM INSPECTION PROGRAM PHASE I INSPECTION REPORT

Identification No.

MA 00211

Name of Dam:

CHESHIRE RESERVOIR DAM

Town:

CHESHIRE

State:

COMMONWEALTH OF MASSACHUSETTS

Stream:

HOOSIC RIVER

Date of Inspection:

26 OCTOBER 1978

BRIEF ASSESSMENT

Cheshire Reservoir Dam is a stone masonry and concrete gravity dam about 50.5 feet long, about 14 feet high with a dropped center spillway 40.5 feet long and a freeboard of 2.7 feet.) The spillway is flanked upstream on the left by a low concrete and stone masonry wall which retains a railroad embankment and on the right by a concrete lined slope. The downstream training walls are stone masonry and concrete. Four 2-feet square sluiceways are equipped with manually controlled, damper type gates. Discharges over the spillway and through the sluiceways are into a channel which passes under Massachusetts Route No. 8 and then into the Hoosic River.

Phase I inspection and evaluation of Cheshire Reservoir Dam does not indicate conditions which would constitute an immediate hazard to human life or property. Based on engineering judgment and the performance of the masonry and concrete dam and outlet works, the project appears to be in fair condition. The project, however, does have inadequacies and deficiencies which, if not remedied, have the potential for developing into hazardous conditions.

Because there are no data on Probable Maximum Floods for an area of 15.2 square miles, it was necessary to synthesize a test flood hydrograph for the contributing area. (Since the dam is classified as intermediate in size, with a low hazard potential, the test flood, in accordance with Corps of Engineers guidelines, is one half the Probable Maximum Flood (1/2 PMF). The 1/2 PMF inflow-peak was 28,592 cfs. The adequacy of the spillway was tested by routing the flood through the reservoir using a computer routing technique. The peak outflow from the 1/2 PMF was 11,242 cfs corresponding to El 976.5 or about 2.75 feet above the top of the dam.

Since the dam is expected to be overtopped with an inflow equal to 1/2 PMF, it is considered that the spillway is not adequate from a hydraulic and hydrologic standpoint. However, since the potential hazard as a result of a breach of the dam is low, and it is considered that little increase in hazard would result from an overtopping and failure, further investigations and/or recommendations are not considered necessary at this time.

Remedial measures are recommended for implementation by the owner, within 12 to 24 months of receipt of this Phase I Inspection Report, to improve overall conditions. These measures, in general, are as follows:

- Repairs to dam and appurtenant structures
- Programs for operation, maintenance and inspection

Eugene O'Brien, P.E. New York No. 29823 This Phase I Inspection Report on Cheshire Reservoir Dam has been reviewed by the undersigned Review Board members. In our opinion, the reported findings, conclusions, and recommendations are consistent with the Recommended Guidelines for Safety Inspection of Dams, and with good engineering judgment and practice, and is hereby submitted for approval.

JOSHPH W. FINEGAN, JR., MEMBER
Water Control Branch
Engineering Division

CARNEY M. TERZIAN, MEMBER

Design Branch

Engineering Division

JOSEPH A. MCELROY, CHAIRMAN Chief, NED Materials Testing Lab. Foundations & Materials Branch Engineering Division

sight Q. Mr Elroy

APPROVAL RECOMMENDED:

DE B. FRYAR

Chief, Engineering Division

PREFACE

This report is prepared under guidance contained in the Recommended Guidelines for Safety Inspection of Dams, for Phase I Investigations. Copies of these guidelines may be obtained from the Office of Chief of Engineers, Washington, D.C. 20314. The purpose of a Phase I Investigation is to identify expeditiously those dams which may pose hazards to human life or property. The assessment of the general condition of the dam is based upon available data and visual inspections. Detailed investigation, and analyses involving topographic mapping, subsurface investigations, testing, and detailed computational evaluations are beyond the scope of a Phase I investigation; however, the investigation is intended to identify any need for such studies.

In reviewing this report, it should be realized that the reported condition of the dam is based on observations of field conditions at the time of inspection along with data available to the inspection team. In cases where the reservoir was lowered or drained prior to inspection, such action, while improving the stability and safety of the dam, removes the normal load on the structure and may obscure certain conditions which might otherwise be detectable if inspected under the normal operating environment of the structure.

It is important to note that the condition of a dam depends on numerous and constantly changing internal and external conditions, and is evolutionary in nature. It would be incorrect to assume that the present condition of the dam will continue to represent the condition of the dam at some point in the future. Only through continued care and inspection can there be any chance that unsafe conditions be detected.

Phase I inspections are not intended to provide detailed hydrologic and hydraulic analyses. In accordance with the established Guidelines, the Spillway Test flood is based on the estimated "Probable Maximum Flood" for the region (greatest reasonably possible storm runoff), or fractions thereof. Because of the magnitude and rarity of such a storm event, a finding that a spillway will not pass the test flood should not be interpreted as necessarily posing a highly inadequate condition. The test flood provides a measure of relative spillway capacity and serves as an aide in determining the need for more detailed hydrologic and hydraulic studies, considering the size of the dam, its general condition and the downstream damage potential.

HOOSIC RIVER BASIN CHESHIRE RESERVOIR DAM INVENTORY NO. MA 00211 PHASE I INSPECTION REPORT

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1. GENERAL OVERVIEW OF DAM.

The Probable Maximum 6-Hour rainfall over ten square miles was obtained from Weather Bureau sources 4 and reduced according to the Corps of Engineers recommendations. 5 It was assumed that there would be a loss of 0.2 inches per hour, resulting in an excess rainfall of 16.56 inches in 6 hours and distributed in accordance with the data published by the World Meteorological Organization. 6

The design storm was first applied to the 1.56 square mile drainage area of the Berkshire Pond and the resulting hydrograph routed through the pond using a computerized technique. The outflow from the Berkshire Pond was then added to the computed inflow hydrograph of the Cheshire Reservoir basin to form the one half Probable Maximum Flood, and resulted in a peak inflow of 28,592 cfs.

The computed discharge capacity of the Cheshire Reservoir Dam spillway with the water level at El 974.2 (the top of the training walls) is 583 cfs. In addition, the total computed discharge capacity of four sluiceways with water level at El 971.5 and El 974.2 is 178 cfs and 208 cfs, respectively. It is assumed that the remnant of the old bridge pier located at the downstream face of the spillway is not expected to affect the discharge capacity of the spillway. The available surcharge storage between the spillway crest El 971.5 and the top of the Dam El 974.2 is estimated to be 1858 acre-feet.

5.2 EVALUATION OF THE ANALYSIS

The Test Flood (1/2 PMF), routed through the reservoir using a computer technique, results in a rise of the reservoir level to a maximum El 976.95, with a corresponding outflow discharge of 11,242 cfs. The dam is overtopped by 2.75 feet and the spillway capacity is only 5.2% of the Test Flood outflow. The spillway is considered inadequate from a hydrologic and hydraulic viewpoint.

References

Report of Field Surveys Conducted by Soil Conservation Service, U.S. Department of Agriculture in Cooperation with Massachusetts Water Resources Commission. (See Appendix).

Recommended Guidelines for Safety Inspection of Dams, Appendix D, U.S. Corps of Engineers.

³"Design of Small Dams," U.S. Department of Interior, Bureau of Reclamation, 1974.

condition of the channel floor. The natural channel is in good condition. It is reported that the operating mechanisms of the sluice gates are in good condition with the handles removed to prevent vandalism. At the time of inspection, it is reported that two sluice gates were open.

For further details see Section 3.1c.

d. Overtopping Potential

The potential for overtopping the dam was investigated on the basis of the adequacy of the spillway and the available surcharge storage to meet a potential emergency inflow. The dam, with a maximum storage capacity of 4000 acre-feet is classified as intermediate in size. In order to estimate the down-stream hazard potential in the event of a dam failure, the U.S. Corps of Engineers' "Rule of Thumb" guidance was used. The estimate assumes: (a) the reservoir surface is at the top of the dam at the time of the breach, (b) a breach of 40% of the dam length (20.2 feet) occurs and (c) the channel has an average roughness coefficient (n) of 0.07. The estimated flood wave heights are as follows:

Distance Below Dam Feet	Peak Elevation Feet	Depth Feet	Discharge cfs
1400	963.2	3.2	1769
2500	960.2	3.2	1757
4000	962.0	8.0	1746

The relatively small flood wave is expected to cause very little damage. The visual inspection, corroborated by the information on USGS Quadrangle Map for Cheshire, Mass., indicates no development in the "flooded area" except the Church Street bridge, located about 4000 feet downstream of the dam could be damaged. The dam, therefore, is classified as a low hazard dam. Based on the size and hazard classification 2, one-half the Probable Maximum Flood was selected as the Test Flood.

For the analysis of the overtopping potential, it is assumed that (a) the entire reservoir acts as one unit, because the sub-basins are similar in size and physical features, and it is expected that the flood inflows would be simultaneous causing the level to rise as if there were no dividing dikes, (b) reservoir is at the spillway crest elevation at the start of the test flood, and (c) the four sluiceways are closed during the test flood. Two triangular unit hydrographs were developed. One to represent unit runoff from the Berkshire Pond sub-basin and the second, using weighted length of water-course and elevation difference, for the Cheshire Reservoir basin.

SECTION 5 - HYDRAULIC/HYDROLOGIC

5.1 EVALUATION OF FEATURES

a. Design Data

No design data or records of flood flows are available for the Cheshire Reservoir area. It was therefore necessary to synthesize a test flood for the contributing area of 9728 acres (15.2 square miles). The reservoir area at El 971.5 is 601 acres (0.94 square miles) or 6.2% of the basin. The reservoir is about 3.7 miles long with an average width of 0.25 miles and is divided into three storage areas by two roadway embankments. There are interconnecting culverts (5.0 feet diameter) beneath the roadways and the reservoir level is the same in these storage areas. The reservoir level is shown as El 970.0 on the USGS Quadrangle sheet for Cheshire, Mass., but the normal level equivalent to the spillway crest elevation is given as 971.5 (MSL). The drainage basin is approximately 5 miles long by 3.5 miles wide and borders the reservoir on three sides. The weighted stream length and elevation difference of the basin is 2.1 miles and 1043 feet, respectively. This gives an average basin slope of 9.4% and is indicative of floods with large peaks and short times of concentration. The lake is 3/4 the length of the basin with simultaneous inflow from at least 8 brooks. This feature increases the probability of very high flood peak discharges of relatively short duration.

The basin is approximately 80% wooded with well established hardwood forests. The storage available in Berkshire Pond which is upstream of the Cheshire Reservoir controls flow from approximately 15% of the basin. The swamp in the Muddy Brook sub-basin also provides some storage. It is probable that the combined storages of about 30% of the basin would modify storm runoffs.

b. Experience Data

It is reported by persons interviewed that during the 1938 flood the water level in the reservoir reached the edge of the Massachusetts Route 8 roadway. During the March 1977 flood, the water was flowing slightly above the railroad track.

c. Visual Inspection

At the time of inspection, the pond level was at El 971.0, six inches below the spillway crest. The spillway is in fair condition. The upstream approaches and the downstream training walls are in good and fair condition respectively. The presence of water made it impossible to observe the

^{*} See end of Section for References.

SECTION 4 - OPERATION AND MAINTENANCE PROCEDURES

4.1 PROCEDURES

There are no formal operation procedures for the project.

4.2 MAINTENANCE OF DAM

There is no formal maintenance manual for the project. Maintenance is carried out as needed. The dam is visited two or three times a week by personnel from Arnold Prints Works, who "look at" the dam, operate the sluice gates as required, and clear out any accumulated trash. There is also a statewide program of inspection established several years ago by the Department of Environmental Quality Engineering, Division of Waterways. Copies of the Department's inspection reports, dated March 28, 1978, October 28, 1977 and December 11, 1972 are given in the Appendix. Prior to this, the County of Berkshire conducted the inspections, a copy of the County's report, dated September 17, 1968, is also included in the Appendix.

4.3 MAINTENANCE OF OPERATING FACILITIES

There is no established maintenance program for the operating facilities.

4.4 WARNING SYSTEM IN EFFECT

There is no warning system in effect.

4.5 EVALUATION

The maintenance and operating procedures for the dam and appurtenant structure are considered inadequate. Measures to improve these inadequacies are given in Section 7.

f. Reservoir Area

In the vicinity of the dam, there is no evidence of potentially unstable slopes or other unusual conditions which would adversely affect the dam.

3.2 <u>EVALUATION OF OBSERVATIONS</u>

Visual observations made during the course of the inspection revealed several deficiencies which at present do not adversely affect the adequacy of the dam. However, these deficiencies do require attention and should be corrected before further deterioration leads to a hazardous condition. Recommended measures to improve these conditions are given in Section 7.

SECTION 3 - VISUAL INSPECTION

3.1 FINDINGS

a. General

The visual inspection of Cheshire Reservoir Dam was made on 26 October 1978. The weather was rainy with temperature about 60°F. The reservoir level at the time of inspection was at El 971.0, six inches below the spillway crest.

b. Dam

The sill and downstream face of the spillway are in fair condition. There is no evidence of distress or movement. Several leaks were observed on the downstream face. The water was spurting out from most of the leaks. (See Photograph No.2). A remnant of a 2.5 feet wide Massachusetts Route 8 old stone bridge pier is located in the center of and extending 10 feet downstream from, the face of the spillway. The headwalls of the spillway are in generally good condition. The presence of tailwater in the plunge pool made it impossible to observe the condition of the base of the dam or the existence of any underseepage.

c. Appurtenant Structures

The visible portion of the upstream left training wall and concrete lined approach slope is in generally good condition except at a few places on the wall the mortar is missing and the concrete is spalled. Both downstream training walls are in fair condition with spalled concrete and missing mortar at several places. The downstream left training wall is leaking at several locations.

The visible portion of the sluice gate operating stems are in good condition. It was reported that the gates are in operating condition, the operating handles are removed to prevent vandalism. The access foot bridge is in generally good condition.

d. Abutments

Except for the leakage noted on the downstream left training wall, no other seepage or unusual conditions were apparent at the abutments.

e. Downstream Channel

The downstream channel of the dam is in generally good condition, except where leakage is noted on the downstream left training wall. There is minor debris and few overhanging trees about 2000 feet downstream from the bridge crossing.

SECTION 2 - ENGINEERING DATA

2.1 DESIGN

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There are no design data, drawings or specific memoranda available covering the construction of the original dam. A sketch of the dam section and plan, given in the Appendix was drawn from rough field measurements made at the time of the visual inspection. The elevations shown are approximate. Sketches showing a section of the dam are attached to field data obtained from U.S. Department of Agriculture, Soil Conservation, and included in the Appendix.

There is no information available on subsurface conditions.

2.2 CONSTRUCTION RECORDS

There are no construction records available.

2.3 OPERATING RECORDS

No records are kept by the owner of rainfall, pool elevation or gate operations.

2.4 <u>EVALUATION OF DATA</u>

a. Availability

Existing information was made available by Arnold Print Works, Inc. Adams, Mass.; Department of Public Works District No. 1, Commonwealth of Massachusetts, Pittsfield, Massachusetts; Department of Environmental Quality Engineering, Division of Waterways, Boston, Mass. and U. S. Department of Agriculture, Soil Conservation Service, Amherst, Mass.

b. Adequacy

The lack of in-depth engineering data did not allow for a definitive review. Therefore, the adequacy of this dam could not be assessed from the standpoint of reviewing design and construction data, but is based primarily on visual inspection; past performance history and sound engineering judgment.

c. <u>Validity</u>

In general, the information obtained from above mentioned sketches and personal interviews is consistent with observations made during the inspection and therefore considered reliable.

g. Dam (See Spillway)

h. <u>Diversion and Regulating Tunnel</u>

Type Not Applicable
Length Not Applicable
Closure Not Applicable
Access Not Applicable
Regulating facilities Not Applicable

i. Spillway

Type Broad-crested

Length of weir, feet 40.5

Crest elevation, feet 971.5

Gates None

U/S channel None

D/S channel See description in Sections 1.2 and 3.1

j. Regulating Outlets

The regulating outlets consist of an uncontrolled spillway and four sluiceways.

The stone masonry spillway is 40.5 feet in length, with a 2 feet wide flat stonesill,2.7 feet below the top of dam.

The four sluiceways, each 2 feet square are reported to have inverts at El 960.5, 961.0, 961.5 and 962. Sluiceway discharges are through damper type gates which are manually controlled from the spillway crest. It is reported that the gates are operable.

b. Discharge at Damsite

Discharge from the Cheshire Reservoir is over a stone masonry, concrete spillway and through four sluiceways. The total computed sluiceways discharge capacities are 178 cfs and 208 cfs with the water level at El 971.5 (spillway crest) and El 974.2 (top of dam) respectively.

The stone masonry spillway is 40.5 feet wide and has a crest width of 2.0 feet. The computed maximum discharge with a head equivalent to the top of dam, El 974.2, is 583 cfs. The total discharge at El 974.2 is 791 cfs.

c. Elevation (ft. above MSL)

Top of dam	974.2
Maximum pool-design surcharge	Unknown
Maximum pool-test flood surcharge	976.95
Full flood control pool	Not Applicable
Recreation pool	971.5
Spillway crest (gated)	Not Applicable
Upstream portal invert diversion tunnel	Not Applicable
Downstream portal invert diversion tunnel	Not Applicable
Streambed at centerline of dam	960 (est)
Maximum tailwater	Unknown

d. Reservoir (feet)

Length of maximum pool	19,000
Length of recreation pool	18,480
Length of flood control pool	Not Applicable

e. Storage (acre-feet)

Recreation pool (gross)	2142
Flood control pool	Not Applicable
Design surcharge	Unknown
Test flood surcharge (net)	4054
Top of dam (gross)	4000

f. Reservoir Surface (acres)

Top of dam	/54.5
Test flood pool	890
Flood control pool	Not Applicable
Recreation pool	621.0
Spillway crest	621.0

f. Normal Operating Procedures

There are no operating procedures. It is reported that the pond level is maintained at spillway crest except in winter, when it is kept at about one to two feet below the spillway crest. The sluice gates are operated as needed.

g. Size Classification

The dam is less than 40 feet high and has a maximum storage capacity of more than 1,000 acre-feet, but less than 50,000 acre-feet. It is, therefore, classified as an "intermediate" dam.

h. Hazard Classification

The dam is in the "low" hazard potential category because analysis indicates that a shallow depth flood wave would result from a dam failure. The wave would cause damage to the Church Street bridge. For details on selection of hazard potential category, see Section 5.1d.

i. Operator

The individual responsible for the day-to-day operation of the dam is:

Mr. Richard Miller, Plant Engineer
Arnold Prints Works, Inc.
Columbia Street
Adams, Mass. 01220
Telephone Number: (Home) 413-458-5837
(Office) 413-743-2600

1.3 PERTINENT DATA

a. Drainage Area

The drainage area contributing to the Cheshire Reservoir Dam is rectangular in shape, about 5 miles by 3.5 miles, with an area of 9728 acres (15.2 square miles). The reservoir is about 3.5 miles long by 0.25 miles wide, almost dividing the drainage area in two. The reservoir area is 6.2% of the total basin area. The reservoir is fed by numerous short brooks, entering at several different locations. The sub-basins of the brook are similar in physical features, with steep wooded slopes and little natural storage. These are expected to peak simultaneously during a basin-wide rain storm.

The dam is a stone masonry gravity structure about 50.5 feet long and at least 14 feet high; it has a 40.5 feet long ungated dropped center spillway with a 2 feet wide, flat stone sill 2.7 feet below top of dam. The downstream face has two steps. It is reported the regulating outlet system is composed of four 2-foot square sluiceways with intake inverts reported at El 960.5, 961.0, 961.5 and 962.0. Discharges through the sluiceways are manually controlled by damper type gates. The gate controls are located on the crest of the spillway with access provided by a 4-foot wide foot bridge which spans the spillway.

The dam is flanked upstream on the left by a railroad embankment and on the right by a concrete-paved natural slope. The railroad embankment in the vicinity of the dam is retained by a low, stone masonry wall. The downstream training walls are stone masonry and concrete. Extension of the wall form the concrete abutments of a bridge which carries Massachusetts Route 8 over the spillway channel. Downstream of the bridge the flow continues in the natural stream bed of the Hoosic River.

b. Location

The dam is located on the Hoosic River, about 0.4 miles south of the intersection between Massachusetts Route No. 8 and Lanesborough Road in the southern section of the Town of Cheshire.

c. Ownership

Cheshire Reservoir Dam is owned by Hoosac Reservoir Company. The day-to-day operation and maintenance is managed by Hoosac Reservoir Company with assistance from Arnold Print Works Inc.

d. Purpose of Dam

The impoundment provided by the dam is for recreational purposes.

e. Design and Construction History

Original design and construction records are not available. It is reported that the dam was built in approximately 1870. It is reported that repairs to the dam were done in 1968 and 1977. In 1968 the stone masonry joints were repointed, the sluice gates were repaired and a new foot bridge was installed.

In 1977 the upstream and downstream faces of the dam were sealed and mortared. The records of these repairs are on file at Arnold Print Works Inc.

PHASE I INSPECTION REPORT NATIONAL DAM INSPECTION PROGRAM HUDSON RIVER BASIN INVENTORY NO. MA 00211 CHESHIRE RESERVOIR DAM TOWN OF CHESHIRE BERKSHIRE COUNTY, COMMONWEALTH OF MASSACHUSETTS

SECTION 1 - PROJECT INFORMATION

1.1 GENERAL

a. Authority

Public Law 92-367, August 8, 1972, authorized the Secretary of the Army, through the Corps of Engineers, to initiate a national program of dam inspection throughout the United States. The New England Division of the Corps of Engineers has been assigned the responsibility of supervising the inspection of dams within the New England Region. Tippetts-Abbett-McCarthy-Stratton has been retained by the New England Division to inspect and report on selected dams in the State of Massachusetts. Authorization and notice to proceed was issued to Tippetts-Abbett-McCarthy-Stratton under a letter of May 3, 1978, from Mr. Ralph T. Garver, Colonel, Corps of Engineers. Contract No. DACW 33-78-C-0298 has been assigned by the Corps of Engineers for this work.

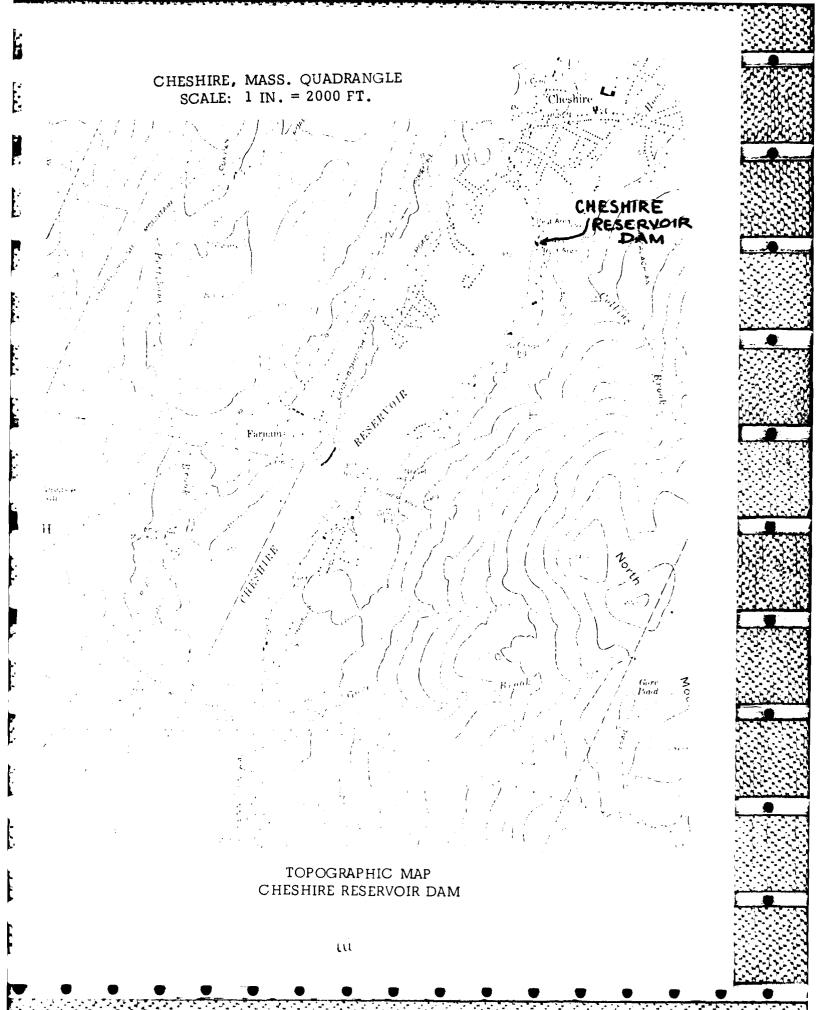
b. <u>Purpose</u>

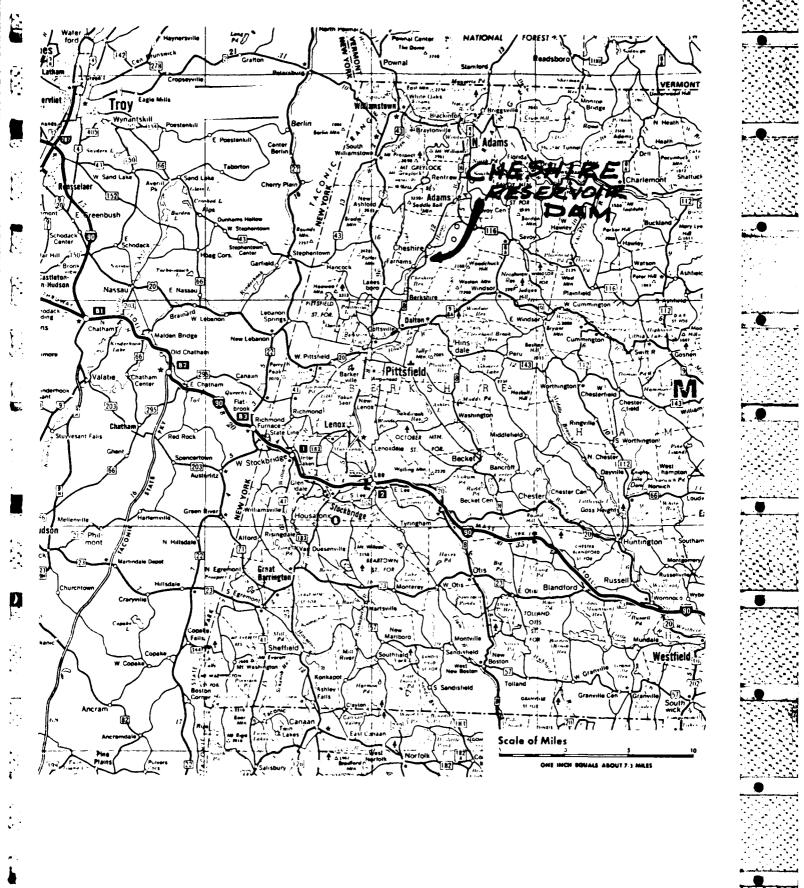
- (1) Perform technical inspection and evaluation of non-Federal dams to identify conditions which threaten the public safety and thus permit correction in a timely manner by non-Federal interests.
- (2) Encourage and prepare the States to initiate quickly effective dam safety programs for non-Federal dams.
- (3) To update, verify and complete the National Inventory of Dams.

1.2 DESCRIPTION OF THE PROJECT

a. Description of Dam and Appurtenances

Cheshire Reservoir Dam is located on a pond adjacent to the Cheshire Reservoir. The pond and reservoir are separated by a railroad embankment with a connection provided by a 21 feet long railroad bridge.





VICINITY MAP
CHESHIRE RESERVOIR DAM

References (cont'd)

⁴Hydrometeorological Report No. 33, 1956.

⁵EC 1110-2-27, U.S. Corps of Engineers, August 1, 1966.

⁶"Manual For Estimation of Probable Maximum Precipitation," World Meteorological Organization, Operational Hydrology Report No. 1, 1973.

SECTION 6 - STRUCTURAL STABILITY

6.1 EVALUATION OF STRUCTURAL STABILITY

a. Visual Observations

Visual observations did not indicate any serious structural problems with the dam. The deficiencies described in Section 3 require attention; the measures to improve the deficiencies are given in Section 7.

b. Design and Construction Data

No design computations or other data pertaining to the structural stability of the dam have been located. On the basis of past performance, visual inspection, as well as engineering judgment, the dam at present appears to be structurally adequate.

c. Operating Records

There are no operating records or reports available. It is reported that there have been no operational problems which would affect the stability of the dam.

d. Post-Construction Changes

It is reported that the dam was built in approximately 1870. There are no records of any modification to dam. In 1968 and 1977 repairs were made to the dam and are described in Section 1.2b.

e. Seismic Stability

The dam is located in Seismic Zone No. 2 and in accordance with recommended Phase I guidelines does not warrant seismic analyses.

SECTION 7 - ASSESSMENT, RECOMMENDATIONS & REMEDIAL MEASURES

7.1 DAM ASSESSMENT

a. Conditions

Phase I investigation of Cheshire Reservoir Dam does not indicate conditions which would constitute an immediate hazard to human life or property. Based on engineering judgment and the performance of the dam and outlet works, the project appears to be in fair condition. The project, however, does have inadequacies and deficiencies which, if not remedied, have the potential for developing into hazardous conditions.

Because there are no data on Probable Maximum Floods for an area of 15.2 square miles, it was necessary to synthesize a test flood for the contributing area equal to one-half the Probable Maximum Flood (1/2 PMF). The 1/2 PMF inflow-peak was 28,592 cfs.

The adequacy of the spillway was tested by routing the Test Flood through the reservoir using computer routing technique. The water surface was assumed to be at the spillway crest at the start of the storm. The peak outflow from the routed flood (1/2 PMF) was 11,242 cfs corresponding to El 976.95 or 2.75 feet above the top of the dam. Since the dam is expected to be overtopped with an inflow equal to the 1/2 PMF, it is considered that the spillway is not adequate from a hydraulic and hydrologic standpoint. However, since the potential hazard as a result of a breach is low and it is considered that little increase in hazard would result from an overtopping and failure, further investigations and/or recommendations are not considered necessary at this time.

b. Adequacy of Information

The lack of in-depth engineering data did not allow for a definitive review. Therefore, the adequacy of this dam could not be assessed from the standpoint of reviewing design and construction data, but is based primarily on visual inspection, past performance history and sound engineering judgment.

c. Urgency

The remedial measures described in subsequent paragraphs should be undertaken by the owner within the next 12 to 24 months, after receipt of this Phase I Inspection Report.

d. <u>Necessity for Additional Investigations</u>

Additional investigations to assess the adequacy of the dam and appurtenant structures do not appear necessary.

7.2 RECOMMENDATIONS

None.

7.3 REMEDIAL MEASURES

a. <u>Alternatives</u>

None.

b. Operating & Maintenance Procedures

It is recommended that the following measures be undertaken by the owner within the next 24 months after receipt of this Phase I Inspection Report.

- 1. Establish a formal program of operation and maintenance, and initiate biennial inspection of the dam.
- 2. Provide round-the-clock surveillance during periods of unusually heavy precipitation.
- 3. Develop a formal system for warning downstream residents in case of emergency.
- 4. Repair leaks on the spillway and the downstream training walls.
- 5. Repair missing and spalled concrete and repoint all masonry walls.
- 6. The plunge pool floor at the base of the dam should be examined when the flow in the channel is at a minimum.

VISUAL INSPECTION CHECKLIST APPENDIX A

VISUAL INSPECTION CHECK LIST PARTY ORGANIZATION

PROJECT CHESHIRE KESERVOIR DAM	DATE 10-26.78
	TIME 9.30 AM
	WEATHER Rainny - 60°F
•	· · · · · · · · · · · · · · · · · · ·
	w.s. elev. 971.0 u.s.
PARTY:	
1. Harvey S. Feldman 6.	·
2. Jyotmára H. Patel 7.	
38.	
49.	
5	
PROJECT FEATURE	INSPECTED BY REMARKS
1 All board Coduses and to 1	
I THE PROBLET HEATINGS (MAKIALIA)	had best members.
	by party members.
2	by party members.
3	by party members.
2	by party members.
2:	by party members.
2	by party members.

PERIODIC INSPECTION CHECK LIST

PROJECT CHESHIRE KESERYO'R DAM	DATE 10-26-18
PROJECT FEATURE	NAME
DISCIPLINE	NAME
DAM EMBANKMENT See Shilliay Channel comme Crest Elevation	weir, Affroach and Discharge
Current Pool Elevation	
Maximum Impoundment to Date	
Surface Cracks	
Pavement Condition	
Movement or Settlement of Crest	
Lateral Movement	
Vertical Alignment	
Horizontal Alignment	
Condition at Abutment and at Concrete Struct	tures
Indications of Movement of Structural Items	on Slopes
Trespassing on Slopes	
Sloughing or Erosion of Slopes or Abutments	
Rock Slope Protection - Riprap Failures	
Unusual Movement or Cracking at or near To	es
Unusual Embankment or Downstream Seepage)

oundation Drainage Feature			
oe Drains		 	
		 _ 	
nstrumentation System			
			-
		•	
	- 2,		

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15.2% 15.2%

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PROJECT	ESHIRE RESERVOIR DAM DATE 10-26-78
PROJECT FEA	TURE NAME
DISCIPLINE	NAME
OUTLET WO	INTAKE CHANNEL AND Intake Channel is a hand adjacent
a. Approa	ch Channel .
• • :	Slope Conditions <u>light concrete lined slope</u> ; in good Condition; left approach is sometimed embantiment retaining well which Bottom Conditions <u>Unable to accordant a pond</u> was full Rock Slides or Falls <u>None</u>
	Log Boom None Debris Miner debris
	Condition of Concrete Lining See comment referre
	Drains or Weep Holes None
	Structure Concernant lancas della da la la values. Openings du subminge de Condition of Concrete
-	Stop Logs and Slots

PRO]	ject fe <i>i</i> Cipline		NAME
<u>out</u>	LET WO	RKS - CONTROL TOWER	there is no control tower. The
	Concr	ete and Structural General Condition	not protected.
		Condition of Joints	
		Spalling	
		Visible Reinforcing	
	,	Rusting or Staining of Co	oncrete
		Any Seepage or Effloresc	cence
	•	Joint Alignment	
		Unusual Seepage or Lea	ks in Gate Chamber
	·	Cracks	
		Rusting or Corrosion of S	Steel
b.	Mecha	nical and Electrical	
	•	Air Vents	٠٠, ١.
		Float Wells	
	•	Crane Hoist	
	· :	Elevator	
	-		

Service Gates Damper ty	ge gate value which are goodston; and manually specified
Emergency Gates	1 None
Lightning Protection System	None
Emergency Power System	Vone
Wiring and Lighting System _	Mone

PROJECT CHESHIRE RESERVOIR DAN	DATE 10-26-18
PROJECT FEATURE	NAME
DISCIPLINE	NAME
General Condition of Conc Rust or Staining Spalling Erosion or Cavitation Visible Reinforcing Any Seepage or Efflorescer	AND None Oulfet channel Ability and Channel, See Comments Spillway weer and Discharge, channel.
Drain Holes	
Channel	
Loose Rock or Trees	Overhanging Channel
Condition of Dischar	rge Channel

PROJ	ect <u></u>	HESHIRE RESERVOIR DAM DATE 10-26-78
PROJ	ECT FE	EATURENAME
DISC	CIPLINE	NAME
		ORKS - SPILLWAY WEIR, APPROACH AND DISCHARGE CHANNELS
a.	Appro	pach Channel Appropriate a part adjusted to general Condition General Condition Generally in good tondered
	٠	Loose Rock Overhanging Channel
		Trees Overhanging Channel
		Floor of Approach Channel It was impainte to definite because pond was full:
b.	Weir	General Condition of Concrete See Misc. Comments
		Rust or Staining None
		Spalling Bott training world of its d.
		Any Visible Reinforcing
		Any Seepage or Efflorescence Simulation in the common services. Drain Holes
c.	Disch	harge Channel
		General Condition n was a section in all diabates
		Loose Rock Overhanging Channel \\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\
		Trees Overhanging Channel Action of the Acti

Floor of Channel	Impossible	to 0	beenne	because	-0+
water in the					
Other Obstructions	About	41	ect from	, weir	the
Channel barses	under Rt.	NO. 8	bridg-	٠,	
			1		

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DEPARTMENT OF CONTROL OF CONTROL OF WATERWAYS

RECEIVED FEB 131976

HOOSAC RESERVOIR CO.

c/o Arnold Print Works, Indeport back to.
Alams, MA 01220

Cethord To Dam Section Coport back to

February 12, 1976

Mr. David Standley, Commissioner
The Commonwealth of Massachusetts
Executive Office of Environmental Affairs
Department of Environmental Quality Engr.
Division of Waterways
100 Nashua Street
Boston, MA 02114

RE: Inspection - Dam #1-2-58-2 Cheshire Cheshire Reservoir Dam

Dear Mr. Standley:

Relative to your letter of January 22 to Arnold Print Works concerning the above dam, please be advised that the owner of the reservoir and the dam is the above Hoosac Reservoir Co.

We note that on November 3, 1975, an engineer from the Massachusetts Department of Public Works made a visual inspection of the above dam and that there still exists the following items to be done that were noted in letter dated February 25, 1974. These conditions will receive the required attention after weather conditions are suitable for such work.

- Cleaning and repointing some of the masonry joints of the side walls and center pier.
- Investigating and making the necessary repair to correct water flowing beneath the spillway capstones on the southerly side of the center pier.

We appreciate your report and advice and agree that we do not want conditions to become more serious.

HOCE AC HESERVOIR

uly yours

E. John Reinke Controller

EJR:mhg

- 3 -

12. Remarks & Recommendations; (Fully Explain) PREVIOUS INSPECTION DATE: November 3, 1975

The dam has had considerable repair work done on it during the summer.

The water was drawndown and the entire dam was sealed and mortured. (see phots)

No deficiencies were noted at this inspection.

For location see Topo Sheet 4-C.

13. Overall Condition:

	Safe
2.	Minor repairs needed
3.	Conditionally safe - major repairs needed
4.	Unsafe
<u></u>	Reservoir impoundment no longer esists (explain)
	Recommend removal from inspection list

				DAM NO	1-2-58-2	
8.	Downstream Face of Dam:				i e	
	Condition: 1. Good X	2.	Minor Rep	airs	· · · · · · · · · · · · · · · · · · ·	
	3. Major Repairs					
9.	Emergency Spillway					
	Condition: 1. Good	2.	Minor Rep	airs		
	3. Major Repairs	4.	Urgent Re	pairs _		···
	Comments:					
			····	-		·····
10.	Water level at time of inspection	n	0.3'	_ above	x	_below
	top of dar	n		-		
	principal spillway	y	X	-		•
	other	r		_		,
11.	Summary of Deficiencies Noted:				٠	
	NONE Growth (Trees & Brush) on En	nban	kment	···		
	Animal Burrows and Washouts	s				
	Damage to slopes or top of	dam		· 		
	" Cracked or damaged masenry					,
	Evidence of seepage					
	W Evidence of piping					
	" Erosion				·	
	" Leaks					
	" Trash and/or debris impedia	ng f	low			
	" Clogged or blocked spillway	··				

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INSPECTION REPORT - DAMS AND RESERVOIRS

Location: CTTy/Town CHESHIRE	Dam No. 1-2-58-2
Name of Dam Cheshirs Reservoir	Inspected by RDJordan-RSpaniol
	Date of Inspection October 28, 1977
	Previous Inspection November 3, 1975
Owner/s per: Assessors	
Reg.of Deeds	
A. Arnold Print Works Name St. & No.	Adams, MA City/Town/State Tel. No.
504 6-1701	Clty/10vii/Stitte lei. no.
Name St. & No.	City/Town/State Tel No.
Caretaker (if any) e.g. superintencowner, appointed by multi owners.	dent, plant manager, appointed by absentee
Name St.& No.	City/Town/State Tel.No.
No. of Pictures taken 1	
Degree of Hazard: (If dam should fa	ail completely)*
1. Minor 2 Mod	lerate X.
3. Severe 4. Dis	astrous
*This rating may change as land use	changes (future development)
Outlet Control: Automatic	Manual X
	Yes No
	100
Comments:	
Upstream Face of Dam:	•
Condition: 1. Good X 2	. Minor Repairs
3. Major Repairs	4. Urgent Repairs
Comments.	

DAM	NO.	1-2-58-2

Cheshire Reservoir Dam

12. Remarks & Recommendations; (Fully Explain).

PREVIOUS INSPECTION DATE:

Supplementary Report: March 28, 1978

MARCH 28, 1978: On this date I was requested to inspect the dam by Deputy Chief Engineer Hannon.

Several people were present during the inspection including: Mr. Grizzi, Representing the Civil Defense Agency Area 4, Trooper Geo. Mott, Mass. State Police, Two Maintenance Men from Arnold Print Works, and the Cheshire Civil Defense Director.

Several leaks were visible through the face of the dam and at both abutments. Most of the leaks appear to be under pressure as the water was spurting out from the structure. Water level was approximately three inches above the spillway.

In my opinion, there was no immediate danger of failure, however, as a precautionary measure, I recommended lowering the impoundment. The gates were partially opened by the men from Arnold Print Works.

March 29, 1978: Checked water level at the dam. It was approximately 2" below the spillway crest. No pressure reduction of the leaks was noted. I therefore recommended that the lowering of the reservoir continue.

The owners repaired the upstream face of this structure in the summer of 1977. At the District inspection conducted in October 1977 no pressure leaks were noted.

Although this dam has a low head there is a large impoundment and a sudden failure could cause damage downstream. Due to the number and type of leaks observed, the District recommends that the owners be advised to retain a consultant to conduct an in depth analysis of the structure.

This office will continue to monitor the dam on a daily basis.

13. Overall	Condition:
-------------	------------

1.	Safe
2.	Minor repairs needed
3.	Conditionally safe - major repairs needed
4.	Unsafe
5.	Reservoir impoundment no longer esists (explain)
	Recommend removal from inspection list



The Commonwealth of Massachusetts

Executivo Office of Transportation and Construction

Department of Public Works DEPARTMENT OF ENGINEERING

1151, PITTRPIELD 01201

March 30, 1978

DIVISION OF WATERWAYS RECEIVED APR 3 1979

Referred To J.I.

SUBJECT

WATERWAYS-District One Cheshire Reservoir Dam Dam #1-2-58-2

ATTENTION Mr. J. J. Hannon

Mr. David Standley, Commissioner

Department of Environmental Quality Engineering

Dear Sir

We have enclosed a copy of a supplementary inspection report for the subject project.

Very truly yours

Dean P. Amidon, P. E. District Highway Engineer

RDJdic Enclosure cc SurLen

DEPARTMENT OF ENVIRONMENTAL QUALITY ENGINEERING DIVISION OF WATERWAYS

HOCSAC RESERVOIR CO.

c/o Arnold Print Works, Inc. Adems, MA 01220 RECEIVED APR 18 1978

April 11, 1978

RE: Dam No. 1-2-58-2 Cheshire Reservoir

Mr. John J. Hannon, P.E.
Chief Engineer
The Commonwealth of Massachusetts
Executive Office of Environmental Affairs
Department of Environmental Quality Engineering
Division of Waterways
100 Nashua Street
Boston, Massachusetts 02114

Dear Mr. Hannon:

We have your letter of April 3 addressed to Arnold Print Works, Inc. regarding the above matter. Please be advised that the owner of the reservoir and the dam is the Hoosac Reservoir Co.

Also, relative to your recommendation, we are contacting Robert G. Brown & Associates, Inc., of Pittsfield, regarding a study of the conditions of the dam.

I presume that your department is aware that in early August of 1977, the dam underwent extensive repairs, and at that time at our request, Inspector Bob Jordan, of your division, looked at it.

We appreciate your interest and notice and/keep you advised of progress.

Very truly yours,

Controller

EJR:mhg

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phots)

DAM NO. ± 1-2-58-2

- 🤄 --

12. Remarks & Recommendations; (Fully Explain).
PREVIOUS INSPECTION DATE: November 3, 1975

The dam has had considerable repair work done on it during the summer.

The water was drawndown and the entire dam was sealed and mortared. (see

No deficiencies were noted at this inspection.

For location see Topo Sheet 4-C.

13. Overall Condition:

х	1.	Safe
		• •;
	2.	Minor repairs needed
	3.	Conditionally safe - major repairs needed
	4.	Unsafe
_	5.	Reservoir impoundment no longer esists (explain)

Recommend removal from inspection list _

L-168-A DAM NO. 1-2-58-2 8. Downstream Face of Dam: Condition: 1. Good X 2. Minor Repairs · 3. Major Repairs ______ 4. Urgent Repairs _____ 9. Emergency Spillway Condition: 1. Good ______ 2. Minor Repairs _____ 3. Major Repairs 4. Urgent Repairs Comments: 10. Water level at time of inspection 0.3' above X below ____ top of dam _____ principal spillway X other _____ 11. Summary of Deficiencies Noted: NONE Growth (Trees & Brush) on Embankment ______ " Animal Burrows and Washouts _____ " Damage to slopes or top of dam " Cracked or damaged masenry " Evidence of seepage " Evidence of piping _____ " Erosion _____

n Other

"___Leaks_____

1-	. 1	n	а

INSPECTION REPORT - DAMS AND RESERVOIRS

1.	Location: 000y/	Town CHESHIRE	Dam No1-2-58-2	
	Name of DamCl	neshire Reservoir	Inspected by RDJordan	-RSpaniol
		r	Date of Inspection Octobe	r 28, 1977
•	•	Pre	evious Inspection Novemb	er 3, 1975
2.		eg.of Deeds	Personal Contact	
	Arnold Pr	rint Works	Adams, MA City/Town/State	Tel. No.
	•		City/109n/5tate	iei. no.
	Name	St. & No.	City/Town/State	Tel No.
3.		y) e.g. superintendent by multi owners.	, plant manager, appointed	
	Name	St.& No.	City/Town/State	Tel.No.
		taken <u>1</u>		
5.		: (If dam should fail		
	1. Minor	2 Modera	te <u>X</u>	
	3. Severe	4. Disast	rous	
	*This rating may	change as land use ch	anges (future development)
6.	Outlet Control:	Automatic	Manual X	
		Operative X	Yes No	
	Comments:			
7.	Upstream Face of	Dam:	•	
		Good <u>x</u> 2. 1		····
	. 3.	Major Repairs	4. Urgent Repairs	. = ;;
	Comments:			
				



The Commonwealth of Massachusetts

Executive Office of Transportation and Construction Department of Public Works

DISTRICT #1 OFFICE

VETERAN'S MEMORIAL HIGHWAY, LENOX P. O. BOX 1151, PITTSFIELD 01201

September 22, 1978

SUBJECT WATERWAYS - District One Onota Lake Dam 1-2-236-6 Cheshire Reservoir Dam 1-2-58-2

Mr. Harvey Feldman Tibbit, Abbott, McCarthy, Stratton 345 Park Avenue New York City 10022

Dear Sir

We have enclosed a copy of the latest District One Inspection Report for the subject dams.

Although the report for Cheshire Reservoir shows the structure to be in satisfactory condition, a problem developed in March 1978 and at the request of the Civil Defense Agency this office conducted a visual inspection on March 27, 1978. Several pressure leaks were noted in the face of the dam and the left abutment. We recommended the immediate lowering of the pond and advised the owners to retain the services of an engineering consultant to conduct an indepth investigation. The firm of Robert G. Brown & Associates was awarded a contract to perform this work.

Mr. Brown has not completed his study, but he has a considerable amount of information relative to the structure.

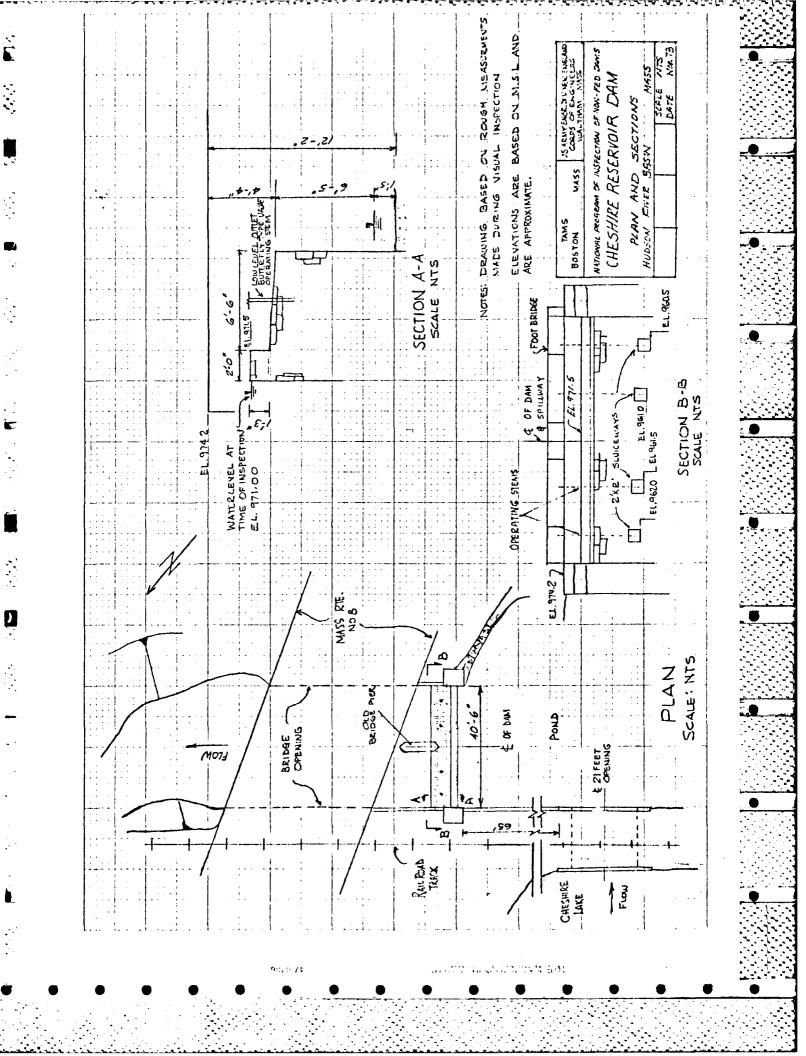
Mr. Brown can be reached at the following address should you desire to contact him: Robert G. Brown & Associates, Berkshire Common, South Street, Pittsfield, MA 01201, telephone: (413) 499-1560.

If we can be of any further assistance, please contact this office.

Very truly yours

Dean P. Amidon, P. E. District Highway Engineer

RDJdic Enclosures cc SurLen



DRAWINGS, INSPECTION REPORTS
AND OTHER DATA

D

APPENDIX B

PROJECT C	HESHIRE RESERVOIR DAM D	ATE 10 - 26-78
PROJECT FE	EATURE N	AME
DISCIPLINE	E N	AME
OUTLET WO	ORKS - SERVICE BRIDGE & 4 rstructure pans over d	test wide, steel grating and
	Bearings Now	
	Anchor Bolts Anchor to #	he liestically of Apillmay.
	Bridge Seat None	
	Longitudinal Members - Heel Conduction	Channel and in gral
	Under Side of Deck 15 boll	om of steel grating and
	Secondary Bracing Steel Cha	nnel and in grad
	Deck is of steel grating	q and in and
	Drainage System	9_
	Railings steel railman	inthospic and in good
	Expansion Joints	Alseme d
	Paint	
b. Abutm	nent and Piers Stone-Major General Condition of Generate	grad grad
	Alignment of Abutment	4 J .
	Approach to Bridge on trail	bantonent
	Condition of Seat and Backwall_	

INSPECTION OF DAMS 1-2-58-2

City or Town of Chashira Date September 17, 1968
Name of Dam Cheshire Reservoir Inspector William A. Heaphy
Owner Arnold Print Works Inc. Address Lime St. Adams, Mass. Tel.
Caretaker Carl Northrup Address Melrose St. Adams, Mass Tel.
Location Northeast Corner of Lake 20 East of R.R. Tracks.
Type and Dimensions Stone Masonry 50' Long 15' high
Spillway, type and size Stone- 40° long 2°9° Freeboard
Outlets, type and size Walves, 30 high X 25 Wide Masonry) With Butterfly
Flashboards, type and height None
Date Built 1870 Condition Fair
When last repaired 1968 By whose orders Owner
Nature of Repairs Pointing up Spillway to seal leaks, Repairs made to
gates, New Footbridge built.
Purpose of Dam Industrial use
Approximate storage of water 67,000,000 cubit feet
Approximate area of water shed 15 square miles
Possible damage due to failure of dam Damage to bridge, State highway and
Railroad
Remarks Water Level about 18" below spillway . Many leaks under
stone slabs for full width of Spillway, about 6 being
fairly large. Foot bridge deteriorating.
That repairs be undertaken at once and completed before fall

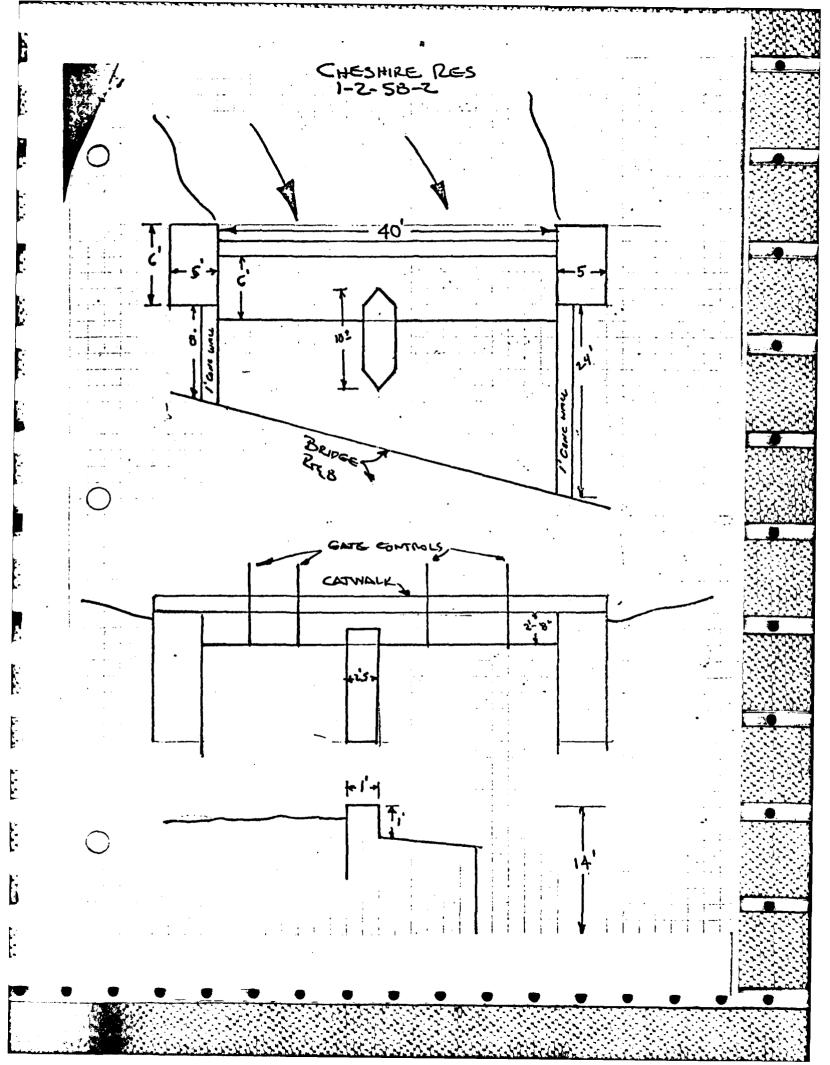
DESCRIPTION OF DAM

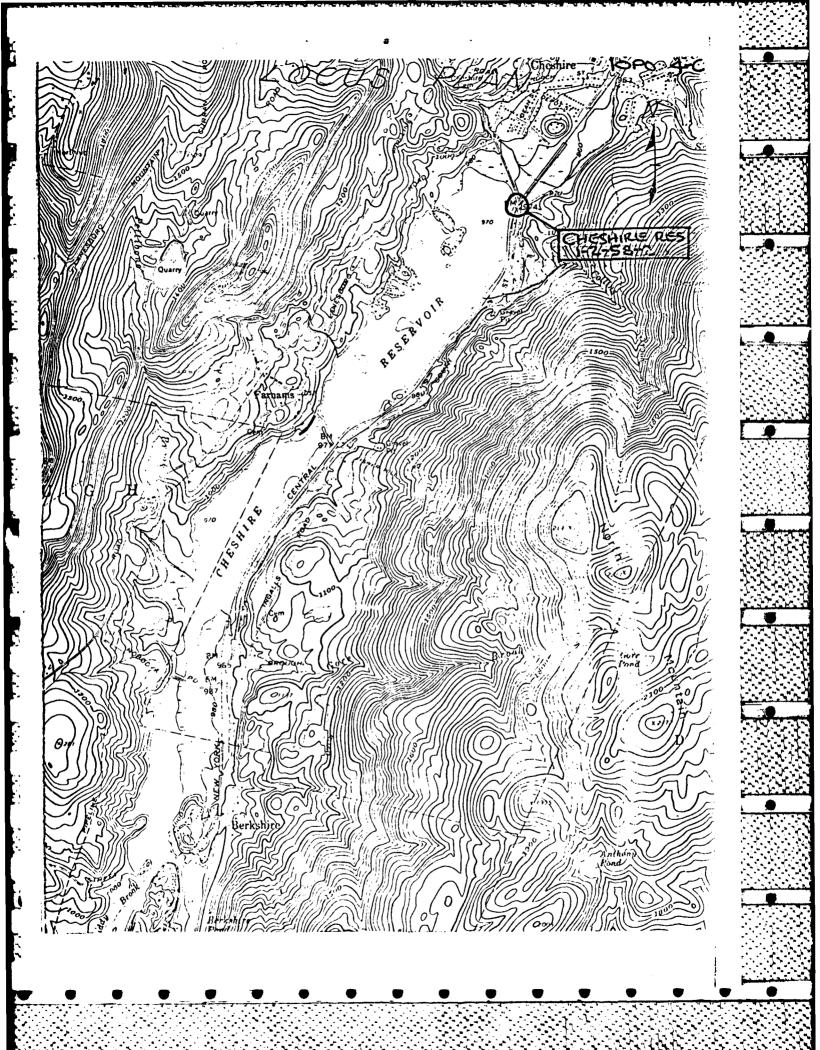
DISTRICTONE

Submitted by R D Jordan	Dam No1-2-58-2
Date	City/Towm_ Cheshire
	Name of Dam Cheshire Reservoir
Location: Topo Sheet No. 4-C	·
	opy of topo map with location of Dam
clearly indicated.	·
Year built: 1870 Year/s	of subsequent repairs
Purpose of Dam: Water Supply	. Recreational X
Irrigation	Other
Drainage Area: 15	sq. miacres.
).	
Normal Ponding Area: 600	Acres; Ave. Depth
Impoundment:	gals;acre ft.
No. and type of dwellings located	adjacent to pend or reservoir
i.e. summer homes etc	
7.	
Dimensions of Dam: Length 4	
•	eam Face vert
	eam Face vert
	op
Classification of Dam by Haterial:	
Earth	Conc. Masonry . Stone Masonry x .
Timber	Rockfill
A. Description of present land us	age downstream of dam:
R Is there a storage area or flo	50 %rural; 50 % urban.
accommodate the impoundment in	the event of a complete dem failure

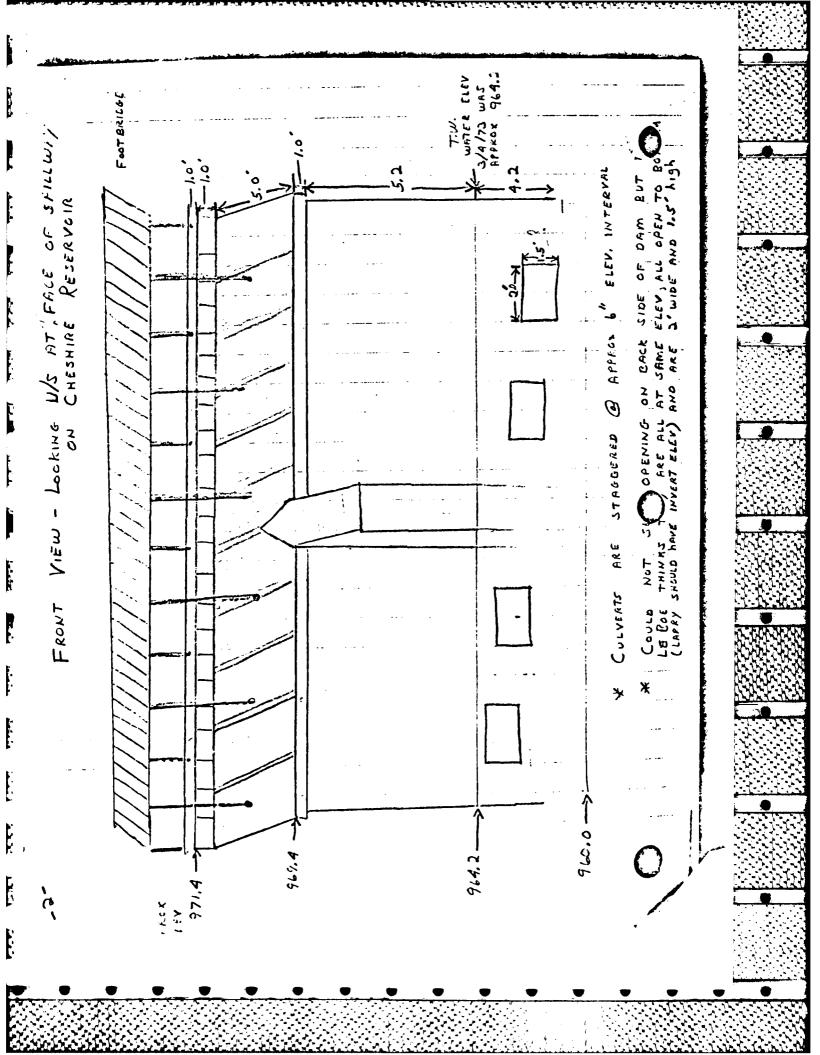
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	• • • • • • • • • • • • • • • • • • •		DAM NO.1-2-58-2
Ris	k to life and property in event of c	omplete failure.	
	No. of people 150±	<u>:</u> •	
	No. of homes 402	•	
	No. of Businesses		gan american and a structure
	No. of Industries	. Type	•
	No. of Utilities	. Type	·
	Railroads Penn Central	•	
	Other dams	· •	
	Cther	•	





JUAN 12, 1 111 Hudson W/S U. S. DEPT. OF AGRICULTURE SOIL CONSERVATION SERVICE Freld Trip 3/4/74-3/5/74 FIELD DATA O CHESHIRE RESERVOIR OUTLET SPILLWINY The reservoir and sopillway are owned and controlled by the Hoosic Kiver Kenty Con a subsidiary of armold Print Works Porc. in adams. The Plant engineer did not have a drawing of the darn but thought one could be obtained through The State. A spoke to the Charles Town let me concerning flooding at the sixorvoir. L'a refferred me to Me or soe who owns the package store ocross the street from the spilling. at one time he wastle Keeper of the dam and suggeted me with info concerning it. There are four a box culverto on the bottom of the love of the dam. There are stoggered at different elevations - docking closely Vey con be seen blow the water line. See offacted drowing



_@ T	here ARE NO OPENINGS, OTHER THON THE ONE	-
<u>_</u>	ARRY L. has data for, under R.R. AT RESERVOIR.	
	FAGE READING - 970.75	
3	ROAD CROSSING BETWEEN THE TWO MAJOR	
	RESERVOIR STORAGE AREAS	
	STORAGE PREA I USAS hardlevel	
	STORAGE AREA I (sof hardlevel)	
	CULVERT A CULVERT B	
	STORAGE AREA II	
	/ (boking - 1/5)	
ROAD ELEV AT 3.0' CULVERT	CROSS SECTION LIEV @ 5.0 CULVERT ROAD EL ROAD	
15 976.95		A(
	Rel. LOW POINT 976.5	
6.2	6.4	
*	CULVERT CULVERT S, O ACCIMP 970.	/ E' : 😠
2.9 (3.0 cm	INVERT TAVERT	
- Y SEMIMENT	ELEV 967.35	
_2.0 CMP IS VERY POOR COM	TH ± 6 SERIA STATE	
	(KCHD ME FILLMAME)	

In addition of found a 2 Accomp on the far

Left Lank of setorage area II. Its invest

elev is approx 971.0 housens this culvert does

mot does stronge area I (It was run ning today

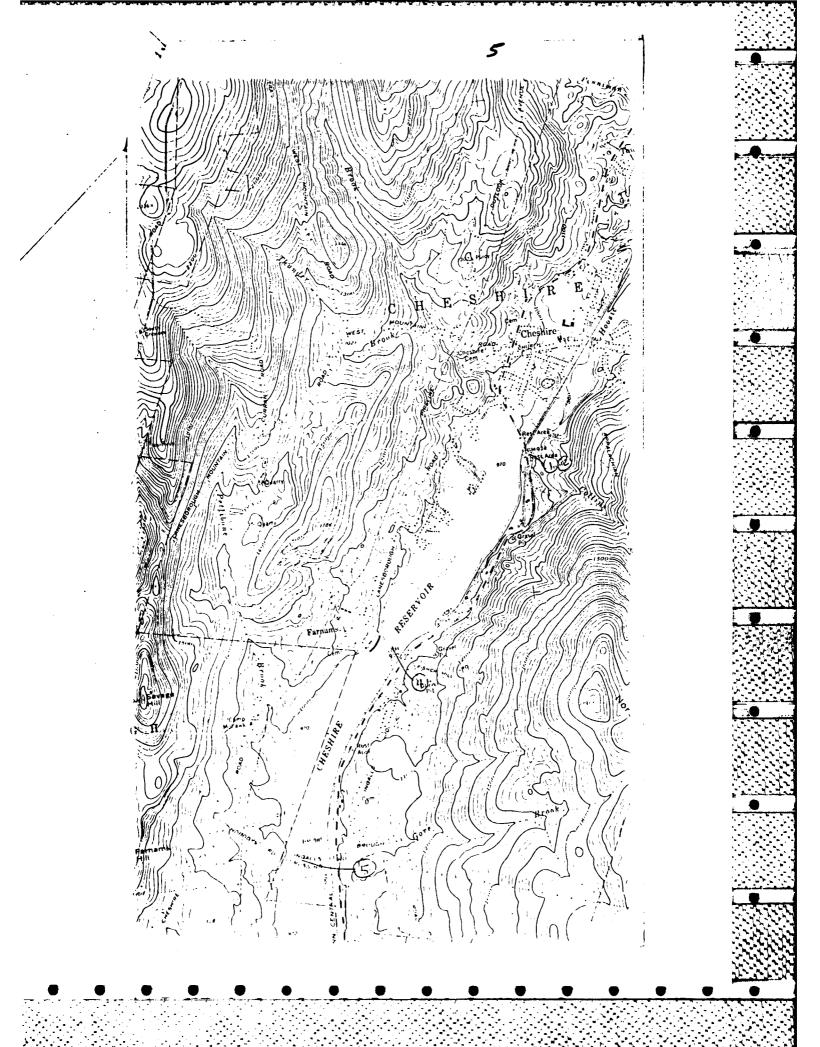
3/4/71) I could not locate its assure but it

appears as if it may drain the read running

above the left bank at this point.

Norony's Bd. This we move called Progall's Rd. Crossing

WATER + 0.4' - TWELLEN GROWN GOVERN G



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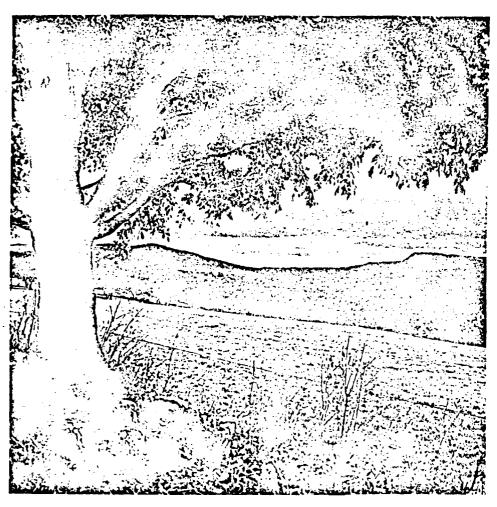
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WATER

& RELATED LAND

RESOURCES

OF



THE

BERKSHIRE REGION

MASSACHUSETTS

US DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
ECONOMIC RESCAPCH SERVICE
FOREST SERVICE
IN COOPERAT IN WITH
MASSACHUSETTS WATER RECOUNCES COMMISSION

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	PROFILE			DAM	DAM DATA			SPILLWA	SPILLWAY DATA		1	FLOOD DATA	5
	LOCATION	LOCATION DRAINAGE			100	NORMAL			CREST PRESENT	PRESENT		ELEVATION	η,
DAM		AREA	TYPE 2/	<u>-</u>	ELEVATION POOL AREA	POOL AREA	-	S.ZE	ELEVATION 4/	CAPACITY B/	O,	100 - YEAR	RARE
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Colonola Mill	~ \$ € \$ €	261	Timber Crib	61	1.7.16	۰	Weir	116	7.906.7	5300	912.0	915.6	1.216
THE FOLLIE	2 0.8 G	?	Stone &	11	8,6.2	21	Weir	٠37	P37.8	13000	844.1	3,7,18	5.648
Glendale	C in the second	B). 2	Concrete	2	6.6.9	0	Ogee Wetr	180	810.8	13000	814.2	7.918	818.2
Mon cwert Mills	Mate 3	615	Timber Crib	92	753.9	æ	Wood Plank	61.	9.747	2009	2.425	3.17.	6.651
Alsing Paper Co.	Plate 3	5 8 C	Timber Crib	77	726.4	51	Concrete Steel Plate	121	718.3	11000	724.3	27.27	729.1
सहरा १६८० व्यक्त													
STATE STORY HOWAY HIGH	Place 9						Concrete	:	}				:
Priggsville	2,7+60	35	Concrete		939.6	-	Ogee Weir	£	435.1	0037	939.7	5.176	942.3
South PRANCE HOSTO RIVER	Flate 10 153+50	15	Stone	:	976.0	\$50	Weir & Gates	03	5.178	057	972.1	١.٤٣	974.7
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IV Information estimated for planning purposes only, should not be used for final design or construction.	ning purpose:	s only, shoul	d not be used	for final	design or cor	natruction.							

A literable dam construction type.

7. Secenal Amplication controlling construction type.

7. Pena Ray Level Secure (951).

9. Finds that can constructed present watershed and flood plain conditions, see Text.

7. Fig. -- cust feet per second.

7. Fig. -- cust feet per second.

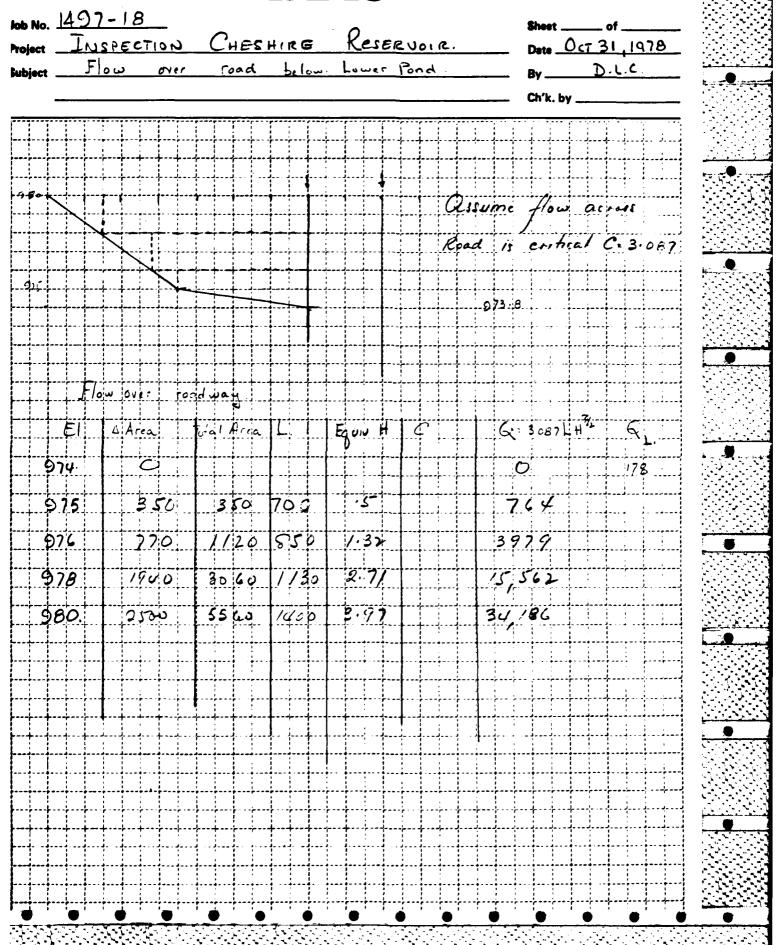
7. Mills Elevation computed at the spitness side of the dam.

IAMS

oject _	Juspection Cheshire Reservoir	Sheet of Date Nov. 7,1977 By ZH	
-	Spillway sluiceways.	Ch'k. by	
w	S El. 971.5 and 974,2 , Low WS.El.	964.2	
	2'0 Area = 2 × 1.5 = 3 D		
L	use eq for square boo unclaing D = 13 =	1.732	
	$H_{T} = \begin{bmatrix} 1.555 & (1+ke) \\ 0.555 & (1+ke) \end{bmatrix} + \begin{bmatrix} 287.64 & n^{2} & L \\ 0.6/3 & 1 \end{bmatrix} \begin{pmatrix} Q \\ 10 \end{pmatrix}$	2	
_1_1_	$A = 0.013$ $H_{T,1} = 974.2 - 964.2 = 1.9 ft.$ $A = 1.732$ $H_{T,1} = 976.5 - 964.2 = 7.3$		
	4= 9'		•
	Xe= 1.0 Q at ws E1, 9742		
	H+=10	2	
	$\frac{10 = (1.555(2) + 287.64(0.012^{2})9)}{(1.732^{4})} \frac{Q}{10}$ $\frac{10 = 0.369}{10} \frac{Q}{10}$	<i>,</i>	
	Q = \(\frac{10}{0.369}\) (10) = 52.10/5 per cul	vert	
	Q-7 = 52 1 x 4 = 208.2 c/s		•

CIVIAL

_IN:	SPECTION	CHESHIRE	LAKE	Dete Nov 10, 1978	_ 🖄
-				By <u>D.L.C.</u>	_
				Ch'k. by	_ 🔄
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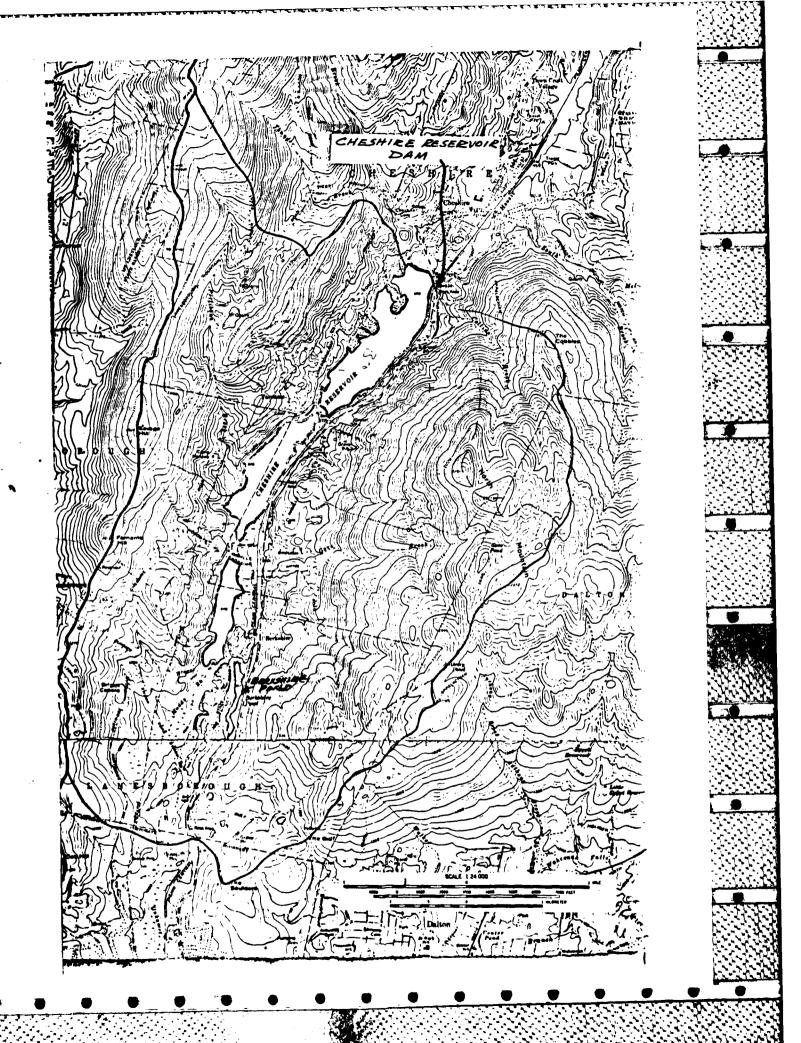


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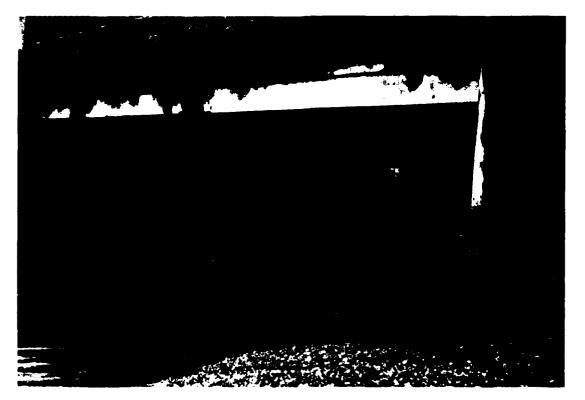
HYDROLOGIC DATA AND COMPUTATIONS

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APPENDIX D



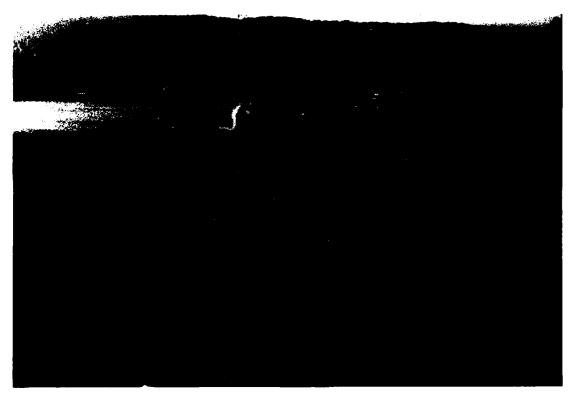
7. VIEW OF DOWNSTREAM CHANNEL LOOKING UPSTREAM. NOTE MASS. RTE. NO. 8 BRIDGE AND REMNANT OF OLD BRIDGE SUPPORT IN BACKGROUND.



8. VIEW OF DOWNSTREAM CHANNEL LOOKING DOWNSTREAM.



5. VIEW OF ACCESS WALKWAY TO LOW LEVEL GATE VALVE STEMS.



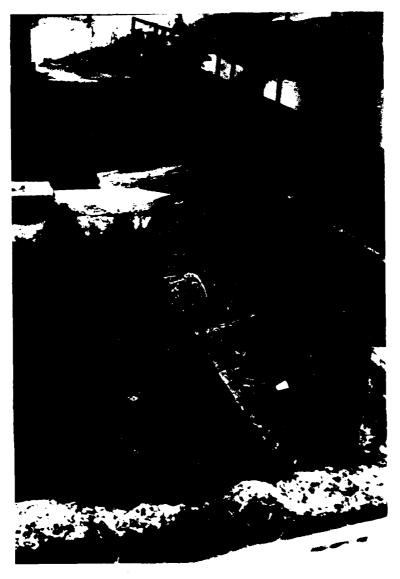
6. VIEW OF RAILROAD EMBANKMENT AND BRIDGE CROSSING CONNECTING LAKE TO APPROACH CHANNEL.



3. VIEW OF UPSTREAM APPROACH CHANNEL. NOTE STONE MASONRY WALL AND CONCRETE LINED SLOPE.

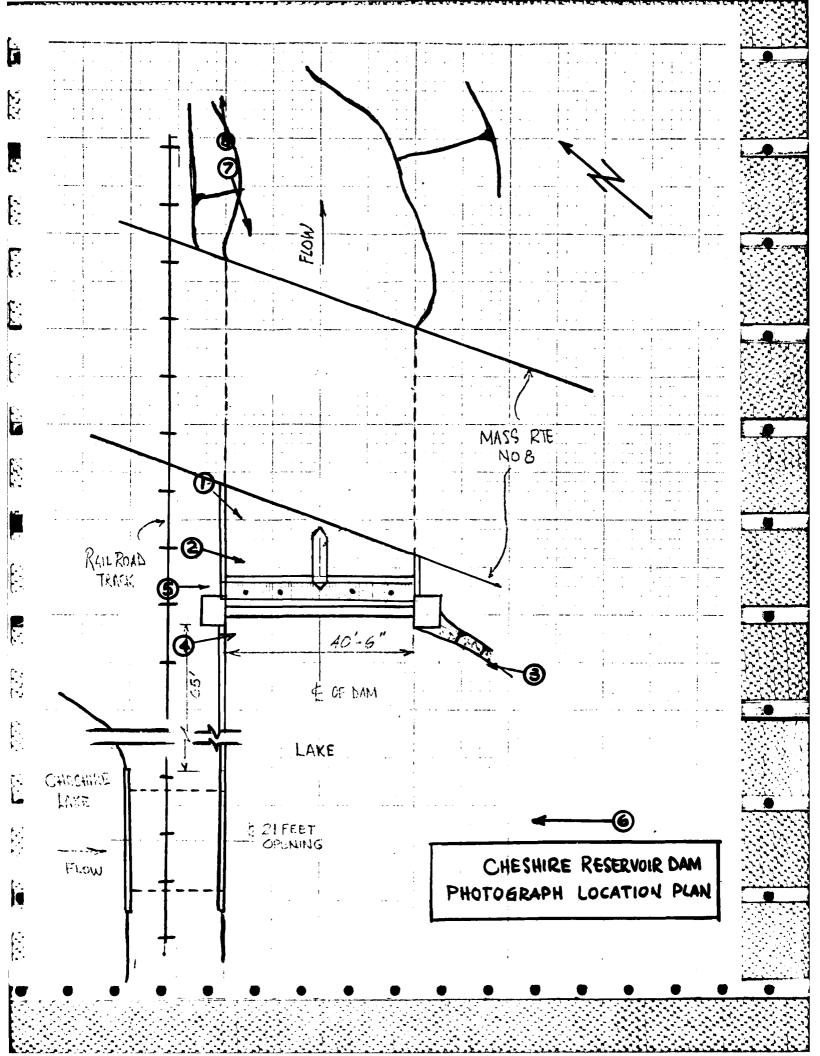


4. VIEW OF SPILLWAY CREST AND REMNANT OF BRIDGE PIER.



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2. VIEW OF CREST AND DOWNSTREAM FACE. NOTE PRESSURE LEAKS.



PHOTOGRAPHS

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APPENDIX C

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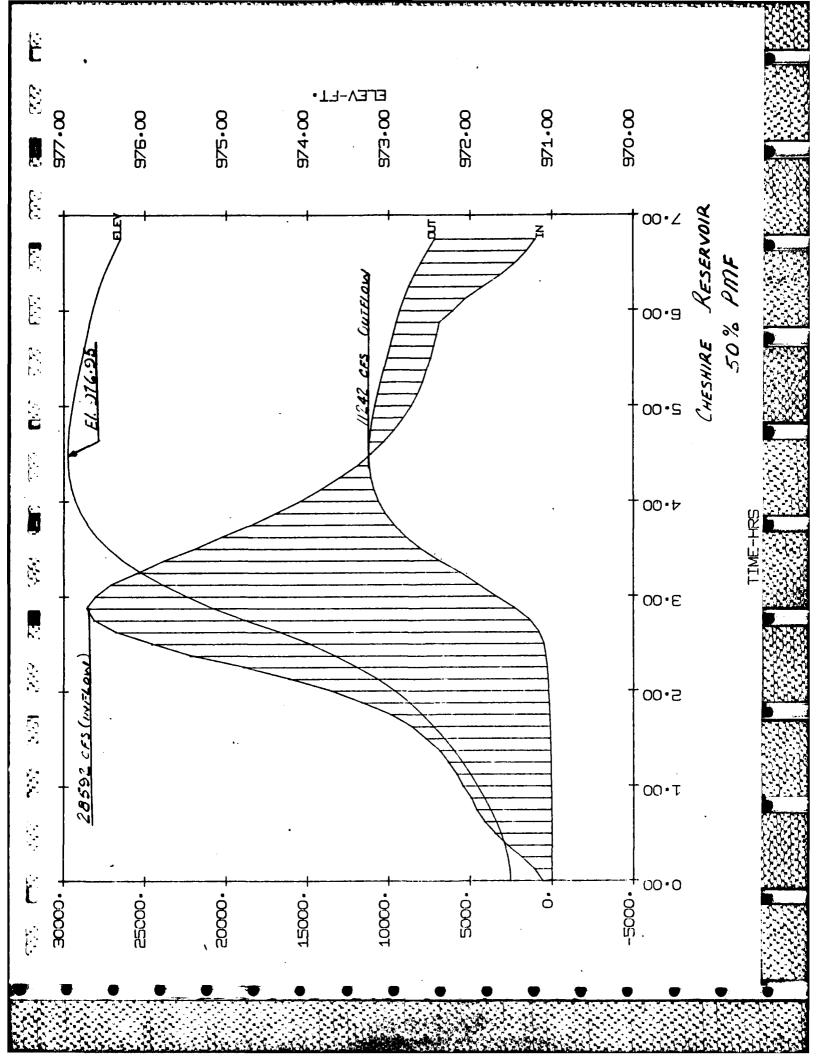
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		STORAGE (ACFT)	3779-4184	3649.5957 3542.5820 3592.5820	3531.5678 3468.5975										
		OUTFLOW (CFS)	9320.41	8766.19 8412.89 8014.33	7587.61	11242.05								-	
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INFORMATION AS CONTAINED IN THE NATIONAL INVENTORY OF DAMS

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APPENDIX E

VER/DATE 15JAN79 SCS A z PHV/FED z DAY MO YR 00NOV78 3000 REPORT DATE POPULATION FFD R Z 3 0 MAINTENANCE 4233.2 7310.0 LATITUDE LONGITUDE (NORTH) (WEST) FROM DAM (Mr.) 3 AUTHORITY FOR INSPECTION Z CONSTRUCTION BY 10151 3272 NED NAME OF IMPOUNDMENT E NON 3) CHESHIRE RESERVOTR NEAREST DOWNSTREAM CITY - TOWN - VILLAGE PL-92-367 5130 OPERATION 3 CHESHIRE BNON INSPECTION DATE REGULATORY AGENCY HYPHAU HELGHT RESERVOIR DAM 7 ZAMAR78 ENGINEERING BY NAME Θ 3 REMARKS REMARKS 7 CONSTRUCTION TIPPETTS-ARHETT-MCCARTHY-STRATTON WOLUME OF DAM CHESHIRE PURPOSES RIVER OR STREAM NONE POPULAR NAME MAXIMUM DISCHARGE (FT.) 583 CONG € INSPECTION BY HOOSIC PIVER YEAR COMPLETED 1870 RESERVOIR CO DIST STATE, COUNTY, 3 WIQTH OWNER 3 HAS LENGTH TYPE SPILLWAY DESIGN DIVISION STATE COUNTY DIET c TYPE OF DAM 0.0 2 \odot PRETPG EGIONIBASIN 20 20 3 HUUSAC Ē Ā NUNE Ξ 211 250 STATE DENTITY

INVENTORY OF DAMS IN THE UNITED STATES

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